

CLAIMS

1. A method for separating air by cryogenic distillation in an installation comprising a medium-
5 pressure column (3), a low-pressure column (4) and a mixing column (6) in which:

(i) air is compressed in a compressor (C01), cooled in a heat exchange line (1) and a first portion
10 (2) of the air is sent to the vessel of the mixing column;

(ii) a second portion of the air is sent to the medium-pressure column where it is separated;

(iii) an oxygen-enriched liquid (19) and a nitrogen-enriched liquid (11) are sent from the medium-
15 pressure column to the low-pressure column;

(iv) an oxygen-enriched liquid (26) is sent from the low-pressure column to the top of the mixing column;

(v) at least one flow of liquid (29) is drawn off
20 from the medium or low-pressure column;

(vi) the second portion of the air is boosted in a booster (8), cooled in the heat exchange line, and divided into a first fraction and a second fraction;

(vii) the first fraction of the air is cooled in
25 the heat exchange line, at least partially liquefied, and sent to the medium-pressure column and/or the low-pressure column;

(viii) the second fraction of the air is expanded in a Claude turbine (9) and sent to the medium-pressure
30 column; and

(ix) an oxygen-rich flow (18) is drawn off from the mixing column and heated in the heat exchange line.

2. The method as claimed in claim 1, in which the
35 liquid (27, 29) drawn off from the medium or low-pressure column is an end product.

3. The method as claimed in either of claims 1 and 2, in which the booster (8) is coupled to the Claude turbine (9).

5 4. The method as claimed in claim 1, 2 or 3, in which the booster is a cold booster.

5. The method as claimed in one of the preceding claims, in which the mixing column (6) operates at
10 between 8 and 20 bar abs.

6. The method as claimed in one of the preceding claims, in which all the air sent for distillation is compressed to between 8 and 20 bar abs.

15 7. The method as claimed in one of the preceding claims, in which between 40 and 90% of the air sent for distillation is boosted.

20 8. The method as claimed in one of the preceding claims, in which the boosted air is boosted to between 12 and 30 bar abs.

9. An installation for separating air by cryogenic
25 distillation in an apparatus comprising a medium-pressure column (3), a low-pressure column (4) and a mixing column (6), a Claude turbine (9), a booster (8), means for compressing air (C01), means (2) for sending a portion of the compressed air of the air to the
30 mixing column, means for sending another portion of the compressed air to the booster, means for sending a fraction of the boosted air to the Claude turbine and for sending the expanded air to the medium-pressure column, means for sending the rest of the boosted air
35 to the medium pressure and/or low-pressure column after liquefaction and expansion, and means for drawing off at least one liquid (27, 29) from the medium-pressure column and/or the low-pressure column as end product.

10. The installation as claimed in claim 9, in which the booster (8) is coupled to the Claude turbine (9).